



# Parcel C Remedial Design



## Remedial Design Overview for Parcel C Hunters Point Naval Shipyard San Francisco, California

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**BCT Meeting, March 24, 2011**



# Regulatory Status



- Final Feasibility Study (FS) report - 2008
- Multiple treatability studies (TS) completed, most recently
  - TS in RU-C1 completed in 2010
  - TS in RU-C5 ongoing
- Record of Decision (ROD) in 2010
  - Excavation, SVE
  - Durable Covers
  - ZVI/anaerobic biological substrate injection
  - Aerobic substrate injection, as needed
  - Institutional controls until cleanup goals are met
- Draft DBR/RD submitted March 21, 2011



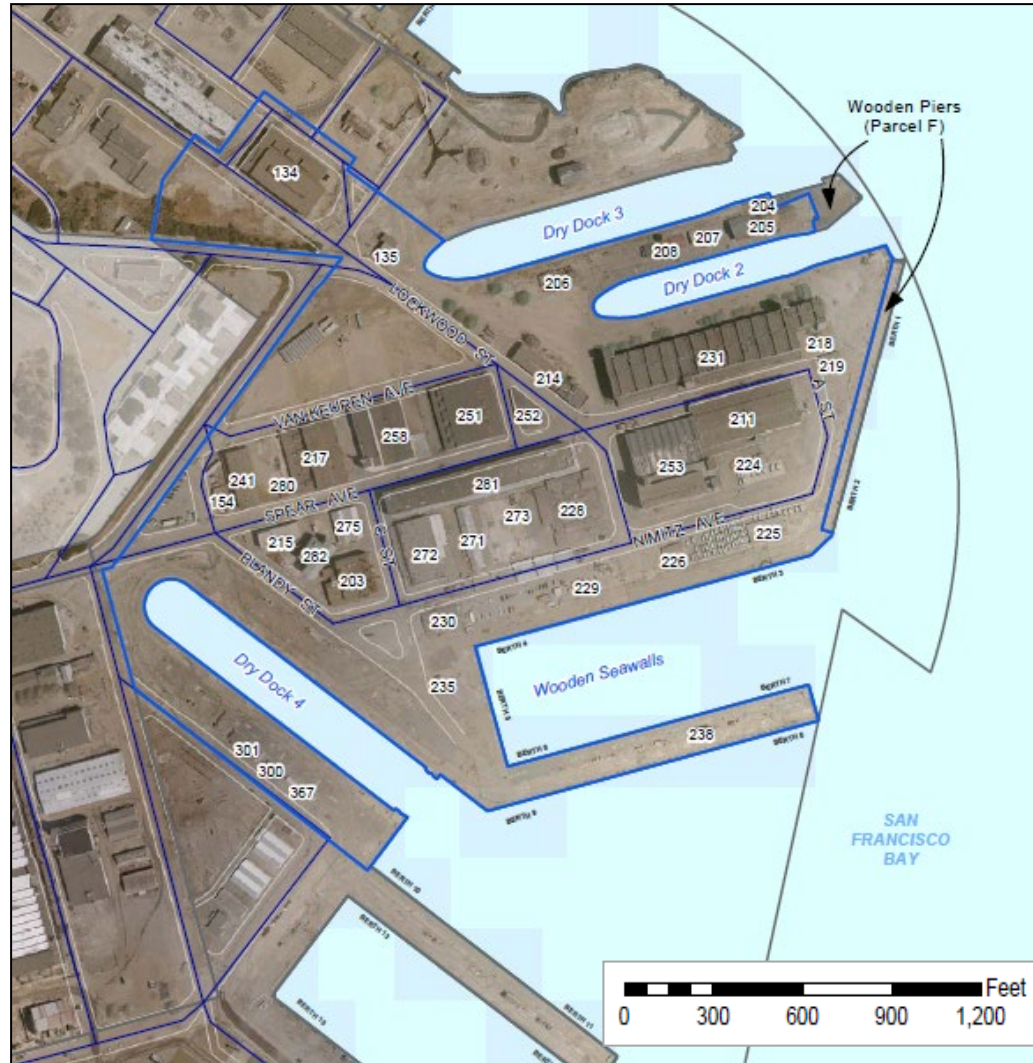
# Agenda



- Content of Remedial Design (RD)
- Summary of impacted areas
- Summary of Selected Remedy
- Discussion of Remedy Components
- Current Status of RD
- Next Steps



# Parcel C Map



- Parcel C Boundary
- 231 Building Number



# Content of the Remedial Design



- Remedial design prepared to meet the requirements of the Parcel C ROD
- Remedial Design Report Package
  - Basis of design report
    - Calculations
    - Drawings
- Operation and Maintenance Plan (soil cover and asphalt/concrete repair)
- Land use control remedial design (LUC RD)



# Summary of Remedy



- Soil Remedy:
  - Excavation (31 areas; ~42,361 cubic yards)
  - SVE (8 areas)
  - Durable Covers (asphalt, concrete repair/replacement, soil cover)
- Groundwater Remedy:
  - ZVI injection and emplacement
  - Anaerobic bioremediation (substrate injection)
  - Aerobic bioremediation (oxygen enhancement) as necessary
- Institutional Controls
- Removal and screening of radiologically impacted soil and structures not included in this DBR/RD





# COCs in Soil above RGs



- VOCs (Except Benzene)
- Benzene
- PAHs
- ▲ Pesticides and SVOCs (Except PAHs)
- ▲ PCBs (Aroclor-1254 and Aroclor-1260)
- Metals
- Total TPH  $\geq$  3,500 mg/kg where commingled within 50 feet of other contaminants



# Excavation, Soil Vapor Extraction



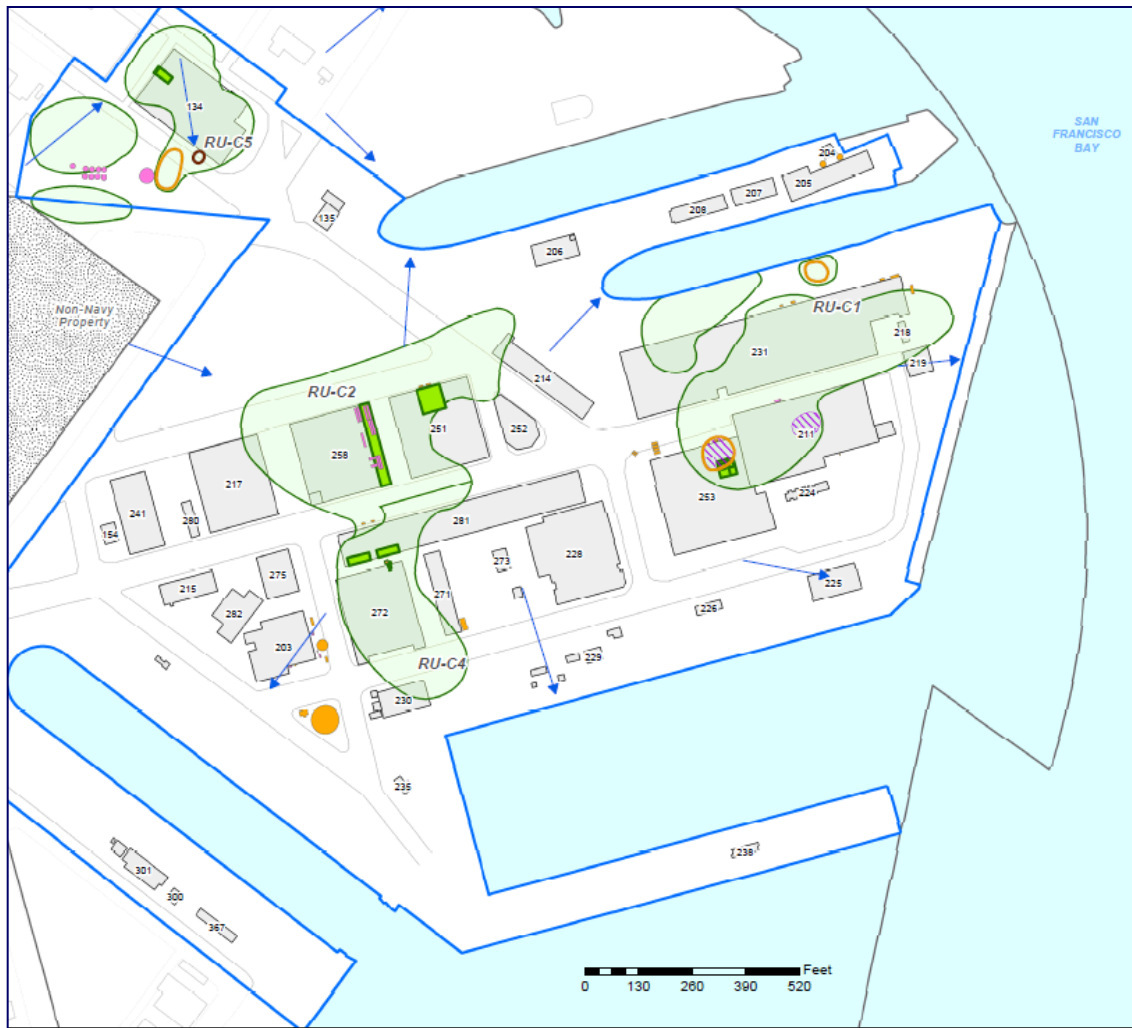
- Soil Excavation
  - 31 areas
  - ~42,361 cubic yards
  - Soils contaminated by arsenic, lead, VOCs, PAHs above RGs
  - Off-site disposal
- Soil Vapor Extraction
  - 8 areas
  - Strip VOCs from unsaturated zone
  - Carbon adsorption
  - Annual review/optimization





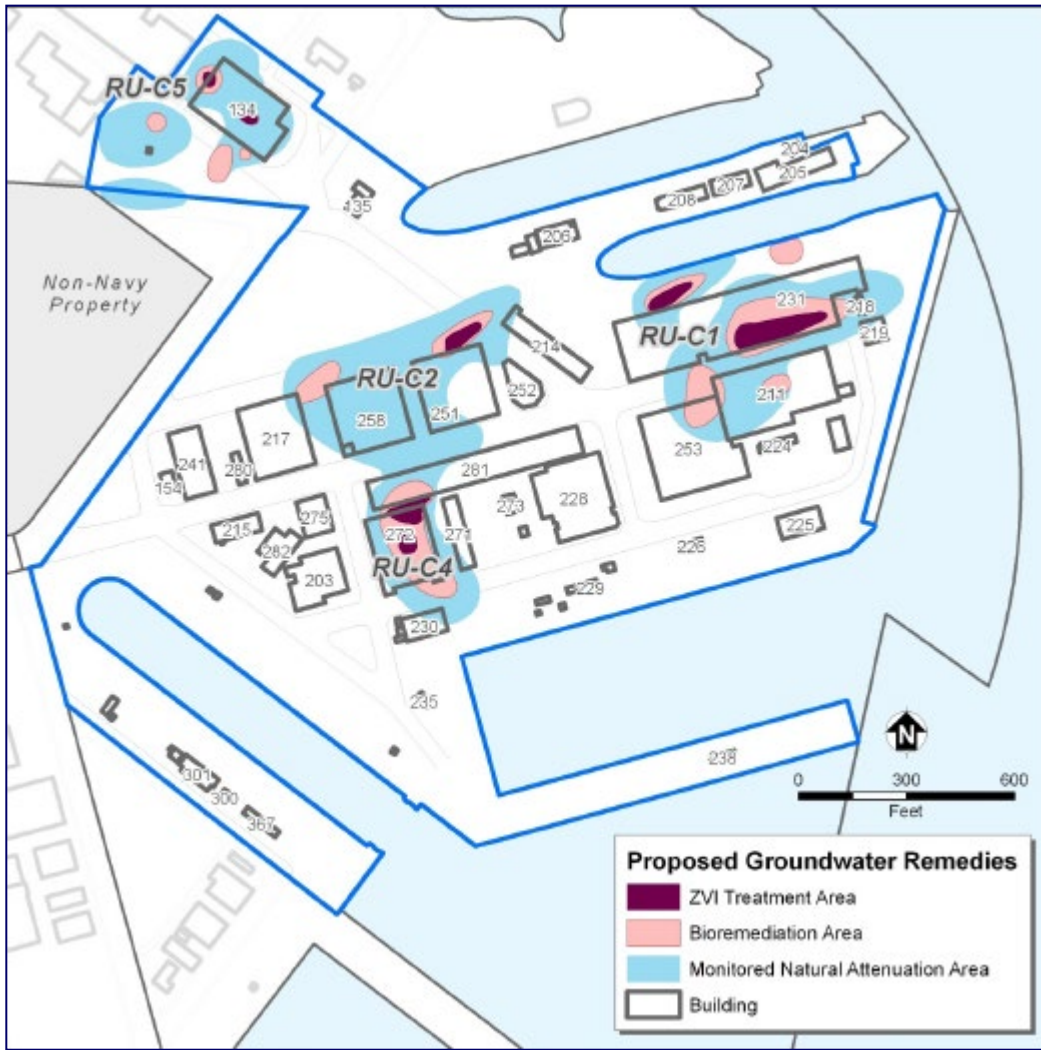


# COCs in Groundwater





# ZVI/Bioremediation



- Combined ZVI/biological substrate injection
  - 7 areas
  - Abiotic/biotic degradation of VOCs exceeding RGs
  - Annual review/optimization
- Aerobic bioremediation, as needed following anaerobic bioremediation (e.g., benzene)







# Durable Covers



- Durable Covers
  - New asphalt
  - Asphalt repair
  - Soil cover
- To remain in place following implementation of other elements of selected remedy
  - Metals remaining in soil exceeding RGs





# Land Use Control RD



- Institutional controls (ICs) - soil
  - Prohibition on any activities that could damage remedy components
  - Restrict land use to prevent unacceptable vapor intrusion risk
  - Prohibit construction of enclosed structures unless approved in accordance with ROD requirements
- ICs – groundwater
  - Prohibition on domestic groundwater use
- General notes on ICs
  - ICs related to ubiquitous metals in soil will remain in place indefinitely, or until the Navy and regulatory agencies agree that ICs are no longer required
  - ICs related to groundwater will be implemented until the RAOs are achieved.



# Remedial Action Work in Parcel C - 2011



- Review and finalize RD
- Perform initial characterization investigation prior to remedial action
- Parcel-wide soil gas investigations to refine treatment areas
- Radiological excavations and building clearances ongoing
- Petroleum excavations planned as part of the TPH program
- Begin remedial action implementation (SVE and groundwater remediation)



# Next Steps



- Agency and BCT comments on Draft RD
- Finalize RD
- Ongoing rad excavations of SS and SD lines
- Implement the remedial action implementation



# Schedule



- Submittal of different versions of RD and estimated dates
  - Draft RD submitted March 21, 2011
  - Comments from BCT due May 5, 2011
  - Draft Final RD submittal June 21, 2011
  - Final RD submittal August 21, 2011
- Initial characterization studies - Summer 2011
  - Preliminary data available early August 2011
  - Draft Final RD with data gap September 30, 2011
  - Final RD with data gap November 30, 2011



# Questions

